The Claims

1-38. (Canceled).

39. (Original) A method of rendering a view of a surrounding scene, the method comprising:

determining, for the view to be rendered, a viewing position representing a location of an observer that is observing the surrounding scene; and

for each pixel in an image to be rendered as a representation of the view of the surrounding scene,

determining a viewing ray passing through the pixel in a direction of viewing of the observer, and

selecting which of a plurality of longitudinally adjacent capture images is to be used to determine a display value for the pixel.

40. (Original) A method as recited in claim 39, wherein the surrounding scene is defined by a capture cylinder including a plurality of longitudinal image arrays generated from a plurality of capture images.

41. (Original) A method as recited in claim 40, wherein the selecting further comprises:

determining an intersection point between the viewing ray and the capture cylinder; and

using the intersection point to determine which one or more of the plurality of longitudinal image arrays to use to determine the display value for the pixel.

42. (Original) A method as recited in claim 41, further comprising interpolating, based on the plurality of longitudinal image arrays, to determine the display value for the pixel if more than one of the plurality of image arrays is used.

43. (Original) A method as recited in claim 41, wherein the selecting further comprises determining, based on the intersection point, which one or more of a plurality of image columns in each of the one or more of the plurality of longitudinal image arrays to use to determine the display value for the pixel.

44. (Original) A method as recited in claim 43, further comprising interpolating, based on the plurality of image columns, to determine the display value for the pixel if more than one of the plurality of image columns is used.

45. (Original) A method as recited in claim 43, wherein determining which one or more of the plurality of image columns to use comprises:

calculating an angle between the viewing ray and a camera direction at the intersection point; and

identifying the one or more of the plurality of image columns based on the calculated angle.

46. (Original) A method as recited in claim 43, wherein the selecting further comprises determining, based on an elevation angle of the viewing ray, which one or more longitudinally adjacent capture images to use to determine the display value for the pixel.

47. (Original) A method as recited in claim 46, wherein the selecting further comprises determining, based on the elevation angle of the viewing ray, which one or more pixels from the one or more capture images to use to determine the display value for the pixel.

48. (Original) A method as recited in claim 39, further comprising rendering a new view of the surrounding scene in response to movement of the observer in one or more of two dimensions.

49. (Original) A method as recited in claim 39, further comprising rendering a new view of the surrounding scene in response to movement of the observer in one or more of three dimensions.

50. (Original) A method as recited in claim 49, wherein the surrounding scene is defined by a capture cylinder generated from a plurality of capture images, and wherein the observer is able to move within the capture cylinder but is constrained such that the field of view of the observer does not exceed the capture cylinder.

51. (Original) A method as recited in claim 39, wherein the surrounding scene is defined by a capture cylinder generated from a plurality of capture images, and wherein the observer is able to move within the capture cylinder but is constrained from moving outside the capture cylinder.

52. (Original) A method as recited in claim 39, wherein the surrounding scene is defined by a capture cylinder generated from a plurality of capture images, and wherein the observer is able to move within the capture cylinder but is constrained from moving outside either the capture cylinder or a circle that is substantially parallel to the ends of the cylinder.

53. (Original) A method as recited in claim 39, further comprising concurrently rendering another view of the surrounding scene, wherein the rendered view corresponds to a viewing position of one eye of an eye pair and the other rendered view corresponds to a viewing position of another eye of the eye pair.

54. (Original) A method as recited in claim 53, further comprising rendering a new view for each eye of the eye pair in response to movement of the eye pair in one or more of three dimensions.

55. (Original) A method as recited in claim 53, further comprising using a two-body rigid object model to describe motion of the eye pair.

56. (Original) A method as recited in claim 53, wherein the surrounding scene is defined by a capture cylinder generated from a plurality of capture images, and wherein the eye pair is able to move within the capture cylinder but is constrained such that neither eye of the eye pair can move outside the capture cylinder.

57. (Original) A method as recited in claim 53, wherein the surrounding scene is defined by a capture cylinder generated from a plurality of capture images, and wherein the eye pair is able to move within the capture cylinder but is constrained such that neither eye of the eye pair can move outside either the capture cylinder or a circle that is substantially parallel to the ends of the cylinder.

58. (Original) One or more computer-readable memories containing a computer program that is executable by a processor to perform the method recited in claim 39.

59. (Original) One or more computer-readable media having stored thereon a computer program that, when executed by one or more processors of a computer, causes the one or more processors to perform acts including:

determining, for a view of a surrounding scene to be rendered, a viewing position representing a location of a point of view inside the scene, wherein the surrounding scene is defined by a capture cylinder including a plurality of longitudinal image arrays generated from a plurality of capture images; and

for each pixel in an image to be rendered as a representation of the view of the surrounding scene,

determining a viewing ray passing through the pixel in a direction of viewing corresponding to the view,

determining an intersection point between the viewing ray and the capture cylinder,

using the intersection point to determine which one or more of the plurality of longitudinal image arrays to use to determine the display value for the pixel,

determining, based on the intersection point, which one or more of a plurality of image columns in each of the one or more of the plurality of

longitudinal image arrays to use to determine the display value for the pixel,

determining, based on an elevation angle of the viewing ray, which one or more longitudinally adjacent capture images corresponding to the one or more longitudinal image arrays to use to determine the display value for the pixel,

determining, based on the elevation angle of the viewing ray, which one or more pixels from the one or more longitudinally adjacent capture images from the one or more capture images to use to determine the display value for the pixel, and

determining the display value for the pixel based on the display values of each of the one or more pixels.

60. (Original) One or more computer-readable media as recited in claim 59, wherein the surrounding scene is defined by a capture cylinder generated from a plurality of capture images, and wherein the observer is able to move within the capture cylinder but is constrained from moving outside the capture cylinder.

61. (Original) One or more computer-readable media as recited in claim 59, wherein the surrounding scene is defined by a capture cylinder generated from a plurality of capture images, and wherein the observer is able to move within the

capture cylinder but is constrained from moving outside either the capture cylinder or a circle that is substantially parallel to the ends of the cylinder.

62. (Original) One or more computer-readable media as recited in claim 59, further comprising concurrently rendering another view of the surrounding scene, wherein the rendered view corresponds to a viewing position of one eye of an eye pair and the other rendered view corresponds to a viewing position of another eye of the eye pair.

63-64. (Canceled).